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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/358,206 07/21/99 CARROLL

J WAB-97090

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MM91/0614

EXAMINER

PEREZ, G

ART UNIT

PAPER NUMBER

2834

DATE MAILED:

06/14/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/358,206

Applicant(s)

CARROLL, JOHN B.

Examiner

Guillermo Perez

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____

DETAILED ACTION

Continued Prosecution Application

The request filed on March 21, 2001 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/358,206 is acceptable and a CPA has been established. An action on the CPA follows.

Specification

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 250 words. It is important that the abstract not exceed 250 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1 to 2, 5 to 7, 11 to 12, 14 to 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (U.S. Pat. No. 5, 945, 749) in view of Oudet et al. (U.S. Pat. No. 5, 559, 378) and further in view of Carrol (U.S. Pat. No. 5, 350, 222).

Li discloses a pneumatically driven electric power generator (figure 1) comprising:

a cylinder (9);

a piston (1) disposed within the cylinder (9);

means (4, 6) engaging the piston (1) for biasing the piston from a second position toward a first position whereby the piston (1) oscillates, moving back and forth between the first position and the second position, driven by air supplied through an air supply passage (13) to the cylinder (9). Li discloses at least one electric coil (7) placed to enclose changing magnetic flux caused by the magnetic moment associated with the piston (1) whereby an emf is generated in the electric coil (7), so that an external circuit connected to the electric coil (7) receives electric power from the electric coil (7). Li discloses that the means (4,6) engaging the piston (1) for biasing the piston (1) from the second position toward the first position is a compression spring (4, 6) disposed between a piston extension (14) and an end closure (11).

Li discloses a cylinder extension (11) at least one of formed integrally with and attached to the cylinder (1), the cylinder extension (11) having an inner surface having a transverse dimension greater than a transverse dimension of the cylinder, the cylinder extension (11) having an end closure. Li discloses an exhaust passage (13) connected to at least one of the cylinder extension (11) and the end closure (11). Li discloses a

piston extension (14) at least one of formed integrally with and attached to the piston (1), at least a portion of the piston extension (14) contacting at least a portion of the cylinder extension (11) to provide positional constraint to the piston (1).

Li discloses that the portion of the piston extension (14) contacting at least a portion of the cylinder extension (11) is an outer surface of the piston extension (14) and the portion of the cylinder extension (11) is an inner surface of the cylinder extension (11). Li discloses that the magnetic moment associated with the piston (1) is provided by a magnet attached to at least one of the piston (1) and the piston extension (14). Li discloses that the magnetic moment associated with the piston (1) is provided by forming at least one of the piston (1) and the piston extension (14) of a material having a magnetic moment.

However, Li does not disclose a cylinder having a first end connectable through an inlet flow path to an air supply passage containing air at a positive pressure, a second end of the cylinder being open. Li does not disclose that the piston is also positionable in a second location wherein the first portion of the piston is outside of the cylinder so that clearance is provided between the piston and the cylinder so that air may exhaust from the cylinder. Li does not disclose a first cylinder having a first end connectable through a first inlet flow path to an air supply passage, a second end of the first cylinder being open. Li does not disclose a second cylinder having a first end connectable through a second inlet flow path to the air supply passage, a second end of the second cylinder being open.

Li does not disclose that the piston is positionable in a first location wherein the first end portion of the piston is disposed within the first cylinder and the second end portion of the piston is disposed outside of the second cylinder. Li does not disclose that the piston is positionable in a second location wherein the second end portion of the piston is disposed within the second cylinder and the first portion of the piston is outside of the first cylinder. Li does not disclose that when the piston is disposed in the first position, air pressure received in the first cylinder through the first inlet flow path drives the piston toward the second position, whereupon the first cylinder exhausts, and when the piston is disposed in the second position, air pressure received in the second cylinder through the second inlet flow path drives the piston toward the first position, whereupon the second cylinder exhausts, so that the piston oscillates.

Li does not disclose sealing means disposed on at least one of an outer surface of the first portion of the piston and an inner surface of the cylinder to prevent loss of air between the piston and the cylinder and permit air pressure in the cylinder to increase when the first portion of the piston is disposed within the cylinder. Li does not disclose that the sealing means is an O-ring in a groove formed on the outer surface of the first portion of the piston. Li does not disclose that the inlet flow path includes an electrically actuated shutoff valve to prevent air flow through the generator, thereby turning off the generator. Li does not disclose that the at least one electric coil is connected to a rectifier to supply DC electric power. Li does not disclose that the rectifier is a full bridge rectifier to supply DC electric power whenever a net flux through the at least one electric coil is changing.

Oudet et al. disclose a pneumatic device (figure 5) comprising:

a cylinder (70) having a first end (75) connectable through an inlet flow path (80) to an air supply passage containing air at a positive pressure, a second end of the cylinder (70) being open (91, 93). Oudet et al. disclose a piston (56) having a magnetic moment associated therewith, the piston (56) being positionable in a first location wherein at least a first portion of the piston (56) is disposed within the cylinder (70). Oudet et al. disclose that the piston (56) also being positionable in a second location wherein the first portion of the piston (56) is outside of the cylinder (70). Oudet et al. disclose that clearance is provided between the piston (56) and the cylinder (70) so that air may exhaust from the cylinder (column 8, lines 48 to 58). Oudet et al. disclose means (52) engaging the piston (56) for biasing the piston (56) from the second position toward the first position so that after the cylinder (70) has substantially exhausted, the piston (56) moves to the first position, whereby the piston (56) oscillates, moving back and forth between the first position and the second position, driven by air supplied through such air supply passage to the cylinder (70).

Oudet et al. disclose at least one electric coil (100,101) placed to enclose changing magnetic flux caused by the magnetic moment associated with the piston (56) whereby an emf is generated in the electric coil (100,101), so that an external circuit connected to the electric coil (100, 101) receives electric power from the electric coil (100,101). Oudet et al. disclose that the means (52) engaging the piston (56) for biasing the piston (56) from the second position to the first position is a spring (52). Oudet et al. disclose a first cylinder (70) having a first end (75) connectable through a first inlet flow

path (80) to an air supply passage, a second end of the first cylinder (70) being open (91, 93). Oudet et al. disclose a second cylinder (71) having a first end (76) connectable through a second inlet flowpath (82) to the air supply passage, a second end of the second cylinder (71) being open (90, 92).

Oudet et al. disclose a piston (56) having a magnetic moment associated therewith, the piston (56) having a first end portion and a second end portion, the piston (56) being positionable in a first location wherein the first end portion of the piston (56) is disposed within the first cylinder (70) and the second end portion of the piston (56) is disposed outside of the second cylinder (71). Oudet et al. disclose that the piston (56) is further positionable in a second location wherein the second end portion of the piston (56) is disposed within the second cylinder (71) and the first portion of the piston (56) is outside of the first cylinder (70). Oudet et al. disclose that when the piston (56) is disposed in the first position, air pressure received in the first cylinder (70) through the first inlet flowpath (80) drives the piston (56) toward the second position, whereupon the first cylinder (70) exhausts, and when the piston (56) is disposed in the second position, air pressure received in the second cylinder (71) through the second inlet flowpath (82) drives the piston (56) toward the first position, whereupon the second cylinder (82) exhausts, so that the piston (56) oscillates (column 8, lines 48 to 58).

Oudet et al. disclose at least one electric coil (100, 101) placed to enclose changing magnetic flux caused by the magnetic moment associated with the piston (56) whereby an emf is generated in the electric coil (100,101), so that an external circuit connected to the electric coil (100,101) receives electric power from the electric coil

(100,101). Oudet et al. disclose that the actuator further includes a spring (51, 52) engaging the piston (56) to bias the piston (56) toward one of the first position and the second position to facilitate starting the generator when air is supplied through the first air supply passage (80) and the second air supply passage (82). The invention of Oudet et al. has the purpose of generating a force by means of significant applied electric power and having optimal space requirements.

Carroll discloses sealing means (79, 80) disposed on at least one of an outer surface of the first portion of the piston (70) and an inner surface (65) of the cylinder. Carroll discloses that the sealing means (79,80) is an O-ring inserted in a groove formed on the outer surface of the first portion of the piston (70). Carroll's invention has the purpose of avoiding escape of air between the piston and the cylinder.

It would have been obvious at the time the invention was made to modify the electromagnetic actuator of Li and provide it with the cylinder, inlet flow paths, piston, springs, electric coils, and sealing means configurations disclosed by Oudet et al. and Carroll for the purpose of having optimal space requirements and avoiding escape of air between the piston and the cylinder.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the piston type control valve disclose by Li with an electric actuated shutoff valve, since the examiner takes Official Notice of the equivalence of the electric actuated shutoff valve and the piston type control valve for their use in the electric generator structure art and the selection of any of these known

Art Unit: 2834

equivalents to prevent air flow through the generator would be within the level of ordinary skill in the art.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to connect the electric coil to a full bridge rectifier since it was known in the art that the full bridge rectifier is used to supply DC electric power whenever a net flux through the coils is changing.

2. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Oudet et al. and further of Carrol in view of Fiegel et al. (U.S. Pat. No. 5, 826, 952).

Li, Oudet et al. and Carrol disclose a pneumatically driven electric power generator as described on item 1 above. However, neither Li, Oudet et al. nor Carrol disclose that the inlet flow path includes an air filter for excluding foreign material from the cylinder.

Feigel et al. disclose that the inlet flow path (33) includes an air filter (62) to exclude foreign material from the cylinder for the purpose of prevent the ingress of dirt particles.

It would have been obvious at the time the invention was made to modify the pneumatically driven electric power generator of Li, Oudet et al. and Carrol and provide it with an inlet flow path including an air filter as disclosed by Feigel et al. for the purpose of excluding foreign material from the cylinder.

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Oudet et al. and further of Carrol in view of Noltner (DE 2355728A).

Li, Oudet et al. and Carrol disclose a pneumatically driven electric power generator as described on item 1 above. However, neither Li, Oudet et al. nor Carrol disclose that the inlet flow path includes a choke to control an impedance of the inlet flow path.

Noltner discloses that the inlet flow path includes a choke (11 and 10) for the purpose of controlling an impedance of the inlet flow path.

It would have been obvious at the time the invention was made to modify the pneumatically driven electric power generator of Li, Oudet et al. and Carrol and provide it with an inlet flow path including a choke as disclosed by Noltner for the purpose of controlling an impedance of the inlet flow path.

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Oudet et al. and further of Carrol in view of Dunne et al. (U.S. Pat. No. 3, 661, 051).

Li, Oudet et al. and Carrol disclose a pneumatically driven electric power generator as described on item 1 above. However, neither Li, Oudet et al. nor Carrol disclose that at least one of the outer surface of the piston extension and the inner surface of the cylinder extension is at least one of made from and coated with a low friction material.

Dunne et al. disclose that at least one of the outer surface of the piston extension and the inner surface of the cylinder extension is at least one of made from and coated with a low friction material (column 4, lines 51 to 57) for the purpose of reducing wear on the pistons.

It would have been obvious at the time the invention was made to modify the pneumatically driven electric power generator of Li, Oudet et al. and Carrol and provide it with at least one of the outer surface of the piston extension and the inner surface of the cylinder extension made from and coated with a low friction material as disclosed by Dunne et al. for the purpose of reducing the wear on the pistons surface during operation.

5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Oudet et al. and further of Carrol in view of Ball et al. (U.S. Pat. No. 5, 890, 460).

Li, Oudet et al. and Carrol disclose a pneumatically driven electric power generator as described on item 1 above. However, neither Li, Oudet et al. nor Carrol disclose that the exhaust passage includes a muffler to reduce noise released from the generator.

Ball et al. disclose that the exhaust passage (1179) includes a muffler (1178) to reduce noise released from the generator for the purpose of reducing noise emitted by the engine and the generator.

It would have been obvious at the time the invention was made to modify the pneumatically driven electric power generator of Li, Oudet et al. and Carrol and provide it with an the exhaust passage including a muffler as disclosed by Ball et al. for the purpose of reducing noise released from the generator.

6. Claims 9 to 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Oudet et al. and further of Carrol in view of Young (U.S. Pat. No. 4, 697, 113).

Li, Oudet et al. and Carrol disclose a pneumatically driven electric power generator as described on item 1 above. However, neither Li, Oudet et al. nor Carrol disclose that the piston extension has at least one longitudinal air passage to carry air to an end of the piston adjacent the end closure, the exhaust being connected to the end closure. Neither Li, Oudet et al. nor Carrol disclose that the at least one longitudinal air passage is a longitudinal slot formed in the outer surface of the piston extension.

Young discloses that the piston extension (17) has at least one longitudinal air passage (column 5, lines 3 to 9) to carry air to an end of the piston (17) adjacent the end closure, the exhaust being connected to the end closure. Young discloses that the at least one longitudinal air passage is a longitudinal slot formed in the outer surface of the piston extension (17). Young's invention has the purpose of keeping equal pressures between two different spaces.

It would have been obvious at the time the invention was made to modify the pneumatically driven electric power generator of Li, Oudet et al. and Carrol and provide it with a piston extension having at least one longitudinal air passage as disclosed by Young for the purpose of keeping equal pressures between two different spaces.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guillermo Perez whose telephone number is (703) 306-5443. The examiner can normally be reached on Monday through Thursday and alternate Fridays.

Application/Control Number: 09/358,206
Art Unit: 2834

Page 13

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308 1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3432 for regular communications and (703) 305 3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

Guillermo Perez
June 11, 2001


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